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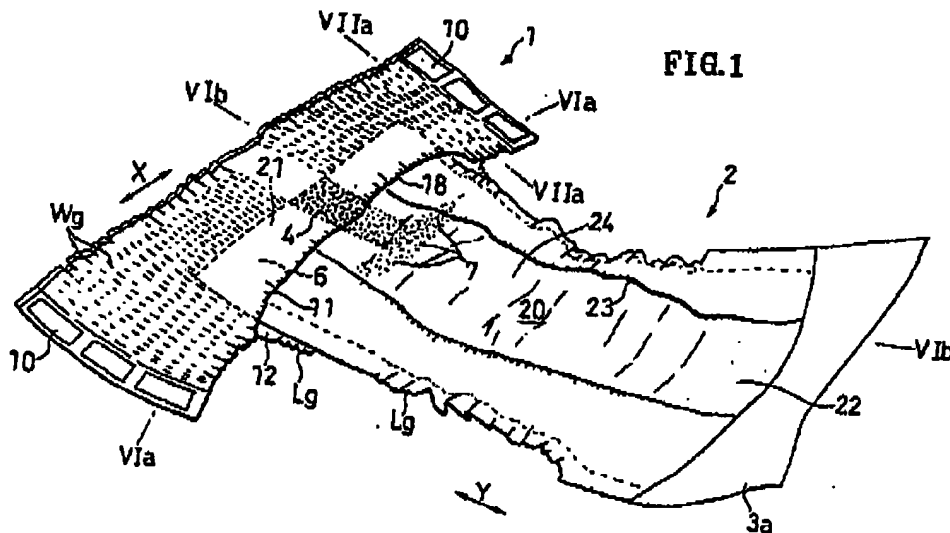
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(54) DISPOSABLE WEARING ARTICLE

(57) A disposable worn article of the present invention includes: a core portion (2) including a first end portion (21), a central portion (20) and a second end portion (22); and a waist portion (1) crossing the core portion (2), wherein: the waist portion (1) includes an elastic member for contracting/expanding the waist portion (1)

in a longitudinal direction thereof, and first and second sheets interposing the elastic member therebetween; a portion of the waist portion (1) and a portion of the first end portion (21) of the core portion (2) are bonded together in a bonding section (4); and a contraction force from the elastic member is reduced in the bonding section (4).



EP 1 486 188 A1

1

EP 1 486 188 A1

2

Description**TECHNICAL FIELD**

[0001] The present invention relates to disposable worn articles such as diapers and pants.

BACKGROUND ART

[0002] A worn article disclosed in Japanese Laid-Open Patent Publication No. 6-30963 includes waist gathers along a waist portion so that the worn article fits around the waist of the wearer. A core portion covering the crotch of the wearer includes therein an absorbent so that bodily discharge can be absorbed.

[0003] An end portion of the core portion is bonded to the waist portion, whereby the end portion of the core portion contracts in the longitudinal direction of the waist portion due to the contraction force from the waist gathers of the waist portion.

[0004] If the core portion contracts, the core portion becomes corrugated and gives a stiff feel to reduce the wearability, or the core portion does not closely fit to the crotch of the wearer, causing a leak of bodily discharge.

[0005] The core portion hinders the waist gathers from contracting freely, thereby decreasing the facility in putting the worn article on the wearer and also deteriorating the fit of the waist portion to the waist.

[0006] Thus, it is an object of the present invention to provide a disposable worn article capable of overcoming these drawbacks.

DISCLOSURE OF THE INVENTION

[0007] In order to achieve the object above, a disposable worn article according to a first aspect of the present invention includes: a core portion including a first end portion, a central portion and a second end portion; and a waist portion crossing the core portion. The waist portion includes an elastic member for contracting/expanding the waist portion in a longitudinal direction of the waist portion, and first and second sheets interposing the elastic member therebetween. A portion of the waist portion and a portion of the first end portion of the core portion are bonded together in a bonding section. A contraction force from the elastic member is reduced or inactivated in the bonding section.

[0008] A disposable worn article according to a second aspect of the present invention includes: a core portion suitable for covering a crotch of a wearer; and a waist portion capable of fitting to a waist of the wearer. The core portion includes a central portion with an absorbent, and first and second end portions located on opposite longitudinal ends of the core portion with respect to the central portion. The waist portion is attached to the first end portion so as to cross the core portion. The waist portion includes an elastic member for contracting/expanding the waist portion in a width direction

of the core portion. A portion of the waist portion and a portion of the first end portion of the core portion are bonded together in a bonding section. A contraction force in the bonding section is smaller than a contraction force from waist gathers formed by the elastic member.

[0009] In a worn article of the present invention, the elastic member of the waist portion contracts the waist portion in the longitudinal direction thereof, thereby forming waist gathers in the waist portion. The elastic member for forming the waist gathers is not substantially provided in the bonding section where the waist portion and the core portion are bonded together, whereby the bonding section will not be contracted in the width direction of the core portion. Therefore, the first end portion of the core portion will not be creased or give a stiff feel due to the waist gathers.

[0010] In the present invention, the contraction force from the bonding section is smaller than that from the elastic member for forming the waist gathers, whereby the force with which the bonding section contracts the core portion in the width direction is smaller than that in a conventional worn article.

[0011] Thus, in the worn article of the present invention, although the waist portion is contracted/expanded in the longitudinal direction thereof due to the contraction force from the elastic member for forming the waist gathers, the bonding section itself does not include waist gathers, whereby the end portion of the core portion will not give a stiff feel, and the bulky core portion will not hinder the contraction of the waist gathers. Thus, the present invention provides an improved wearability and an improved fit.

[0012] In the present invention, "the contraction force from the elastic member being reduced or inactivated" may mean that no elastic member is present in the bonding section, and may also mean that the contraction force from the elastic member present in the bonding section is smaller than that from the waist gathers formed by the elastic member present in areas other than the bonding section.

[0013] Preferred examples of methods for reducing the contraction force of the elastic member in the bonding section are as follows.

(1) An elastic member provided on a sheet is cut off, together with the sheet, at at least one position during the production of the worn article of the present invention. In such a case, even if the elastic member is interposed between two sheets, the elastic member, which has been cut off during the production, contracts on the surfaces of the sheets. Thus, after the production, further contraction of the elastic member will not occur in the bonding section. Note that in order to prevent the contraction of the cut-off elastic member interposed between the two sheets, it is preferred that the adhesive for fixing the elastic member is not applied near the bonding section. Alternatively, the amount of the adhesive may

3

EP 1 486 188 A1

4

be reduced near the bonding section.

(2) At least a portion of an elastic member provided on a sheet is melted together with a portion of the sheet and then solidified during the production of the worn article of the present invention. If the elastic member breaks off, the contraction force of the elastic member can be reduced for the same reason as that with the method (1) above. Moreover, even if the elastic member does not break off, the composition or the physical properties of the elastic member will be altered by heat, thereby reducing the contraction force of the elastic member. Moreover, the contraction force of the elastic member is reduced even by melting of a portion of the elastic member. Note that the methods (1) and (2) above can be combined together.

[0014] In the present invention, it is only required that the elastic member forming the waist gathers do not contract the waist portion in the bonding section. For example, as long as the elastic member is provided in the bonding section in a non-stretched (contracted) state, the elastic member may extend entirely across the length of the bonding section, or the elastic member may extend generally across the entire length of the waist portion while the elastic member is not divided.

[0015] If the elastic member is divided at a position in the longitudinal direction of the waist portion so as not to extend entirely across the bonding section, it is possible to produce a core portion in which the elastic member for forming the waist gathers does not substantially exist in the area of the bonding section itself. In such a case, the bonding section and the waist gathers are arranged so as not to overlap with each other.

[0016] In the present invention, an elastic member that does not form so-called "waist gathers" may be provided generally across the entire length of the waist portion. An example of an elastic member that does not form waist gathers may be, for example, an elastic member that is arranged along an edge of the cover material, which forms the inner surface of the waist portion.

[0017] In the present invention, a portion of the waist portion and the entirety of the first end portion of the core portion may be bonded together in the bonding section. Note however that in an article in which the waist portion is bonded only to a portion of the first end portion, as compared with an article in which the waist portion is bonded to the entirety of the first end portion, the area where no elastic member is present can be made smaller, whereby the waist gathers can be provided over a greater extent of the waist portion.

[0018] Moreover, a member forming the waist portion and the core portion may further be bonded together in an area other than the bonding section, i.e., in an area other than the first end portion. For example, a member forming the waist portion and a member forming the core portion may further be bonded together near the central portion of the core portion.

[0019] Moreover, in the present invention, the core portion includes an absorbent for absorbing bodily discharge. The absorbent may be, for example, fluff pulp obtained by fiberizing (crushing) pulp with a fiberizer (crusher) into a fibrous form, or a material obtained by mixing the fluff pulp with superabsorbent polymer particles (absorbent polymer) and letting it deposit into a cotton-like form, and the absorbent has a liquid absorbing property.

[0020] Moreover, the elastic member may be a rubber thread or a resin tape having elasticity or a net-shaped member such as Rebound. Where a rubber thread is used as the elastic member, a plurality of rubber threads may be arranged parallel to one another.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] The present invention will be understood more clearly from the following description of preferred embodiments taken in conjunction with the accompanying drawings. Note however that the embodiments and the drawings are merely illustrative and should not be taken to define the scope of the present invention. The scope of the present invention shall be defined only by the appended claims. In the accompanying drawings, like reference numerals denote like components throughout the plurality of figures.

[0022] FIG. 1 is a schematic perspective view illustrating a diaper according to a first embodiment of the present invention, FIG. 2 is a partially cutaway perspective view illustrating an important part of the diaper, FIG. 3 is a perspective view illustrating the diaper as it is worn, FIG. 4 is an exploded perspective view illustrating the components of the diaper being separated from one another, FIG. 5(a) is a plan view illustrating the diaper being stretched in three directions, FIG. 5(b) is a bottom view illustrating the same, FIG. 6(a) and FIG. 6(b) are cross-sectional views taken along lines VIa-VIa and VIb-VIb, respectively, in FIG. 1, FIG. 7(a) is a cross-sectional view taken along line VIIa-VIIa in FIG. 1, FIG. 7(b) and FIG. 7(c) are cross-sectional views taken along the same line illustrating alternative embodiments, and FIG. 8 is a schematic plan view illustrating a diaper according to a second embodiment being spread out.

BEST MODE FOR CARRYING OUT THE INVENTION

[0023] The embodiments of the present invention will now be described with reference to the drawings.

[0024] FIG. 1 to FIG. 7(c) illustrate a disposable diaper according to the first embodiment.

[0025] As illustrated in FIG. 1 and FIG. 3, the diaper of the present embodiment includes a waist portion 1 that fits around the waist of the wearer, and a core portion 2 covering the crotch of the wearer. The waist portion 1 and the core portion 2 may be attached together in a T-shaped pattern in which the portions are arranged generally perpendicular to each other.

5

EP 1 486 188 A1

6

[0026] The core portion 2 of FIG. 1 includes a central portion 20, and first and second end portions 21 and 22 located at opposite ends of the core portion 2 in the longitudinal direction Y. The first end portion 21 is attached to the waist portion 1. An attachment sheet 3 illustrated in FIG. 5(b) may be bonded on the outer surface of the second end portion 22. Moreover, a holding sheet 3a for holding down end portions of a pair of cuffs 23 may be bonded on the inner surface of the second end portion 22 of FIG. 5(a). An attachment member 10 to be in a planar engagement with the attachment sheet 3 is attached on the inner surface of each end portion of the waist portion 1. The attachment member 10 may include, for example, the hooks of a hook-and-loop fastener, in which case the waist portion 1 can be attached to, and detached from, the second end portion 22 of the core portion 2 via the attachment sheet 3 of FIG. 5(b).

[0027] As illustrated in FIG. 4, the core portion 2 includes the pair of cuffs 23 to be in contact with the surface of the wearer, a liquid-permeable topsheet 24, a liquid-absorbing absorbent 25, and a liquid-impermeable backsheet 26. Moreover, the core portion 2 may include a first outer material 27 and/or a first leg elastic member 28. The cuff 23 may include a cuff elastic member 29 for contracting the cuff 23 in the Y direction. Note that the backsheet 26 may be a sheet that is air-permeable and water-repellent.

[0028] FIG. 6(a), FIG. 6(b) and FIG. 7(a) are schematic cross-sectional views taken along lines VIa-VIa, VIIa-VIIa and VIIa-VIIa, respectively, in FIG. 1.

[0029] In these schematic views, each dotted area represents an area on which an adhesive is applied. The adhesive may be a hot-melt adhesive. Note that where a hot-melt adhesive is used as the adhesive, the application of the adhesive may be performed by using a bead coater, a coater, a spiral coater, a curtain coater, a spray coater, a transfer roll, or the like. The hot-melt adhesive may be a synthetic rubber resin, an olefin resin, or the like. Moreover, an adhesive may be applied on an elastic member.

[0030] As illustrated in FIG. 6(a), the backsheet 26 and the first outer material 27 are layered and bonded together with the first leg elastic member 28 being interposed therebetween. The backsheet 26 and the topsheet 24 are layered and bonded together into a single piece with the absorbent 25 being interposed therebetween. Note that a portion of the cuff 23 is bonded to the inner surface of the backsheet 26. The leg elastic member 28 may be interposed between the topsheet 24 and the backsheet 26. Alternatively, the leg elastic member 28 may be interposed between the cuff 23 and the topsheet 24, the backsheet 26 or the first outer material 27.

[0031] The core portion 2, which includes layers stacked on one another as described above, is bonded to the waist portion 1 of FIG. 1 as will be described later.

[0032] As illustrated in FIG. 4, the waist portion 1 includes a cover material 11 (an example of the third sheet) to be in contact with the surface of the wearer,

an inner material 12 (an example of the second sheet), an outer material 14 (an example of the first sheet) and a plurality of waist elastic members 13. The waist elastic members 13 are interposed between the inner material 12 and the outer material 14. A cover elastic member 15 for contracting the cover material 11 in the longitudinal direction X of the waist portion 1 may be bonded to the cover material 11. The outer material 14 may include a second leg elastic member 16. The waist elastic members 13 contract the waist portion 1 in the longitudinal direction X, thereby forming waist gathers Wg (FIG. 1) in the waist portion 1 of the diaper. The inner material 12 and the outer material 14 may be integrally provided with protruding portions 12a and 14a, respectively, which protrude toward the central portion 20 of the core portion 2.

[0033] Note that the waist elastic member 13, the cover elastic member 15, the second leg elastic member 16, the first leg elastic member 28 and the cuff elastic member 29 may each be a rubber thread. Where the waist elastic members 13 are rubber threads, the rubber threads may be arranged parallel to one another.

[0034] As illustrated in FIG. 6(a), the inner material 12 and the outer material 14 are layered and bonded together with the waist elastic members 13 being interposed therebetween. As illustrated in FIG. 6(a) and FIG. 6(b), a portion of the cover material 11 may be layered and bonded on the upper surface of the inner material 12, forming a bag-like portion 18 in the area where the inner material 12 and the cover material 11 are not bonded together. The first end portion 21 of the core portion 2 illustrated in FIG. 1 and FIG. 2 is inserted into the bag-like portion 18, and the first end portion 21 is interposed between the cover material 11 and the inner material 12.

[0035] Now, the attachment between the waist portion 1 and the core portion 2 will be described.

[0036] The waist portion 1 and the first end portion 21 of the core portion 2 may be bonded together at a main bonding section 4 near the center of the waist portion 1 in the longitudinal direction X, as indicated by dots in FIG. 6(a). As indicated by dots in FIG. 4 and FIG. 1, the main bonding section 4 is positioned near the center of the core portion 2 in the width direction X. Therefore, as illustrated in the partially cutaway perspective view of FIG. 2, the waist portion 1 and the first end portion 21 of the core portion 2 may not be bonded together at non-bonding sections 6 on the left and right of the main bonding section 4 (FIG. 1). Moreover, the bag-like portion 18 has an opening facing toward the central portion 20 of the core portion 2. Note that the bag-like portion 18 may be bonded to the core portion 2 at a bonding section 4a located around a position above the main bonding section 4.

[0037] Moreover, as indicated by dots in FIG. 1 and FIG. 4, the inner material 12 and the first outer material 27 may be bonded together at an auxiliary bonding section 7 near the central portion 20 of the core portion 2. At such a position, there is no influence of the contrac-

7

EP 1 486 188 A1

8

tion force from the waist elastic members 13 forming the waist gathers Wg. Therefore, problems such as a stiff feel due to contraction will not occur in the core portion 21.

[0038] FIG. 5(a) and FIG. 5(b) are a plan view and a bottom view, respectively, illustrating the diaper of the present embodiment being stretched in three directions (in a spread-out position) against the contraction force from the elastic members.

[0039] In the spread-out position of FIG. 5(a), the bag-like portion 18 has a width in the X direction that is substantially larger than that of the core portion 2, as indicated by a two-dot chain line, whereby the width of the bag-like portion 18 remains to be larger than that of the core portion 2 even when the waist portion 1 of FIG. 1 is in a contracted position. Therefore, the first end portion 21 of the core portion 2 can be housed in the bag-like portion 18 without being contracted in the width direction X.

[0040] The waist elastic members 13 may be divided at a position in the longitudinal direction X so that they do not extend entirely across the main bonding section 4 of FIG. 4. Thus, in the present embodiment, the waist elastic members 13 are not provided generally across the entirety of the main bonding section 4 (but are provided only in portions of the main bonding section 4), and are provided only in areas 50 illustrated in FIG. 5 (a). Therefore, as illustrated in FIG. 1 and FIG. 3, the waist elastic members 13 contract the waist portion 1 in the X direction, except in the main bonding section 4 and end portions of the waist portion 1. Note that as illustrated in FIG. 4, the waist elastic members 13 are also provided above the bag-like portion 18 so as to extend parallel to the bag-like portion 18, thus contracting the waist portion 1 in the X direction, except in the main bonding section 4.

[0041] Moreover, the cover elastic member 15 of FIG. 4 may be continuous generally across the entire length of the waist portion 1 in the longitudinal direction of the waist portion 1 along the edge of the opening of the bag-like portion 18 (FIG. 1). Thus, the cover elastic member 15 contracts the cover material 11.

[0042] In the diaper of the present embodiment, the waist gathers Wg are formed as illustrated in FIG. 1 by the contraction force from the waist elastic members 13 of FIG. 4. However, the core portion 2 is unlikely to be contracted (distorted) in the width direction X because the contraction force from the waist elastic members 13 is reduced in the main bonding section 4. Therefore, the core portion 2 is kept in a near-flat position, whereby the core portion 2 will not give a stiff feel, thus providing an improved wearability.

[0043] Moreover, since the core portion 2 can transform according to the movement of the wearer, thus providing an improved fit.

[0044] The waist gathers Wg can contract/expand freely without being restricted by the core portion 2, thereby increasing the facility in putting the diaper on

the wearer while also providing an improved fit to the waist.

[0045] As clearly shown in FIG. 2, the first end portion 21 of the core portion 2 includes the non-bonding sections 6, which may be housed in the bag-like portion 18 of FIG. 1. Thus, the core portion 2 is bonded to the waist portion 1 only in the bonding section 4 at the center in the left-right direction. However, since the non-bonding section 6 is covered by the cover material 11, the non-bonding section 6 will not be turned up, be kinked or slip out of position.

[0046] The cover material 11 is slightly apart from the core portion 2 in the bag-like portion 18 and has the cover elastic member 15 (FIG. 4), whereby the cover material 11 will be in contact with the skin below the waist, thus serving as an anti-leak cuff. Thus, the cover material 11 suppresses a leak of bodily discharge through the waist portion.

[0047] Where the protruding portions 12a and 14a are provided as illustrated in FIG. 4, the second leg elastic member 16 and the first leg elastic member 28 may be lined up with each other as illustrated in FIG. 5(a) and FIG. 5(b). At least one second leg elastic member 16 may be arranged along the edge of the outer material 14. For example, the second leg elastic member 16 may be arranged entirely across a portion of the outer material 14 for holding the waist and the opposing portion. Moreover, of the second leg elastic member 16 arranged across the entire article, a portion that overlaps with the core portion 2 may be cut off. By cutting off the elastic member as described above, the core portion 2 will not be contracted. Note that even when the second leg elastic member 16 is arranged in a portion of the outer material 14 that corresponds to the core portion 2, the presence of the second leg elastic member 16 will not cause a problem if the contraction force from the second leg elastic member 16 is weaker than those from other portions. For example, the tension of the second leg elastic member 16 may be controlled during the process of interposing the second leg elastic member 16 between the outer material 14 and the inner material 12, so as to weaken the contraction force from the portion of the second leg elastic member 16 that corresponds to the core portion 2.

[0048] Note that instead of controlling the tension thereof, the portion of the second leg elastic member 16 that corresponds to the core portion 2 may be embossed so as to reduce the contraction force from the second leg elastic member 16.

[0049] At least one first leg elastic member 28 may be arranged in the longitudinal direction Y of the core portion 2 and along each side edge of the first outer material 27. The first leg elastic member 28 arranged entirely along the side edge of the first outer material 14 may be cut off in a portion thereof that corresponds to the waist portion 1. By cutting off the elastic member as described above, the waist portion 1 will not be contracted. Note that even when the first leg elastic member 28 is ar-

9

EP 1 486 188 A1

10

ranged in a portion of the first outer material 27 that corresponds to the waist portion 1, the presence of the first leg elastic member 28 will not cause a problem if the contraction force from the first leg elastic member 28 is weaker than those from other portions. For example, the tension of the first leg elastic member 28 may be controlled during the process of interposing the first leg elastic member 28 between the first outer material 27 and the backsheet 26, so as to weaken the contraction force from the portion of the first leg elastic member 28 that corresponds to the waist portion 1.

[0050] Note that instead of controlling the tension thereof, the portion of the first leg elastic member 28 that corresponds to the waist portion 1 may be embossed so as to reduce the contraction force from the first leg elastic member 28.

[0051] Moreover, pre-cut pieces of the first leg elastic member 28 may be attached to the core portion 2 while being stretched so as to arrange the pieces of the first leg elastic member 28 at predetermined positions on the core portion 2. The second leg elastic member 16 and the first leg elastic member 28 form leg gathers 1g in the diaper, as illustrated in FIG. 1, FIG. 2 and FIG. 3.

[0052] Note that an upper edge portion of the outer material 14 may be folded back onto, and attached to, the cover material 11, as illustrated in FIG. 7(a). Alternatively, the outer material 14 may be layered together with the inner material 12 and the cover material 11, instead of being folded back, as illustrated in FIG. 7(b). Alternatively, a single sheet may be folded back to form the cover material 11 and the outer material 14.

[0053] As illustrated in FIG. 8, the diaper of the present embodiment may include first and second waist portions 1A and 1B attached to the first and second end portions 21 and 22, respectively, of the core portion 2. The first and second waist portions 1A and 1B have a structure that is similar to or the same as that of the waist portion 1. Note that elastic members for forming waist gathers are not shown in FIG. 8. The core portion 2 may be folded in two, with the first and second waist portions 1A and 1B being placed onto each other, and with end portions 101 and 102 of the first waist portion 1A being attached to those of the second waist portion 1B. Through such an attachment, it is possible to form a pants-type diaper. The attachment of the end portions 101 and 102 for forming a pants-type diaper may be done through heat sealing or ultrasonic sealing.

[0054] Moreover, a plurality of hook-and-loop fasteners or adhesive tapes may be provided on the outer surface of the first waist portion 1A. After disengagement of the end portions 101 and 102, the hook-and-loop fasteners can be attached to the outer surface of the second waist portion 1B.

[0055] While preferred embodiments of the present invention have been described above with reference to the drawings, obvious variations and modifications will readily occur to those skilled in the art upon reading the present specification.

[0056] For example, in the embodiment described above, the first end portion 21 of the core portion 2 of FIG. 1 may have a narrow width corresponding to that of the bonding section 4, and the entirety of the first end portion 21 may be bonded to the waist portion 1. Moreover, the entirety of the first end portion 21 of FIG. 1, having a large width, may be bonded to the waist portion 1.

[0057] Moreover, it is not necessary that the inner material 12 and the outer material 14 of the waist portion 1 include the protruding portions 12a and 14a.

[0058] The present invention may be applicable to disposable pants, as well as to disposable diapers.

[0059] Thus, such variations and modifications shall fall within the scope of the present invention as defined by the appended claims.

INDUSTRIAL APPLICABILITY

[0060] The present invention can be employed in the structure of disposable diapers or disposable pants.

Claims

1. A disposable worn article, comprising: a core portion including a first end portion, a central portion and a second end portion; and a waist portion crossing the core portion, wherein:

the waist portion includes an elastic member for contracting/expanding the waist portion in a longitudinal direction of the waist portion, and first and second sheets interposing the elastic member therebetween;

a portion of the waist portion and a portion of the first end portion of the core portion are bonded together in a bonding section; and a contraction force from the elastic member is reduced or inactivated in the bonding section.

2. A disposable worn article, comprising: a core portion suitable for covering a crotch of a wearer; and a waist portion capable of fitting to a waist of the wearer, wherein:

the core portion includes a central portion with an absorbent, and first and second end portions located on opposite longitudinal ends of the core portion with respect to the central portion; the waist portion is attached to the first end portion so as to cross the core portion; the waist portion includes an elastic member for contracting/expanding the waist portion in a width direction of the core portion; a portion of the waist portion and a portion of the first end portion of the core portion are bonded together in a bonding section; and

11

EP 1 486 188 A1

12

a contraction force in the bonding section is smaller than a contraction force from waist gathers formed by the elastic member.

3. A disposable worn article according to claim 1 or 2, wherein the elastic member is provided in a longitudinal direction of the waist portion and is divided at at least one position in the longitudinal direction so as not to extend entirely across the bonding section. 5 10

4. A disposable worn article according to claim 1, 2 or 3, wherein a portion of the elastic member is solidified after being melted in the bonding section. 15

5. A disposable worn article according to claim 1, 2, 3 or 4, wherein:

the waist portion includes first, second and third sheets layered on one another; and the first end portion of the core portion is interposed between the second sheet and the third sheet. 20

6. A disposable worn article according to claim 5, wherein a portion of the first end portion of the core portion is bonded to a portion of at least one of the second sheet and the third sheet. 25

7. A disposable worn article according to any one of claims 1 to 6, wherein: 30

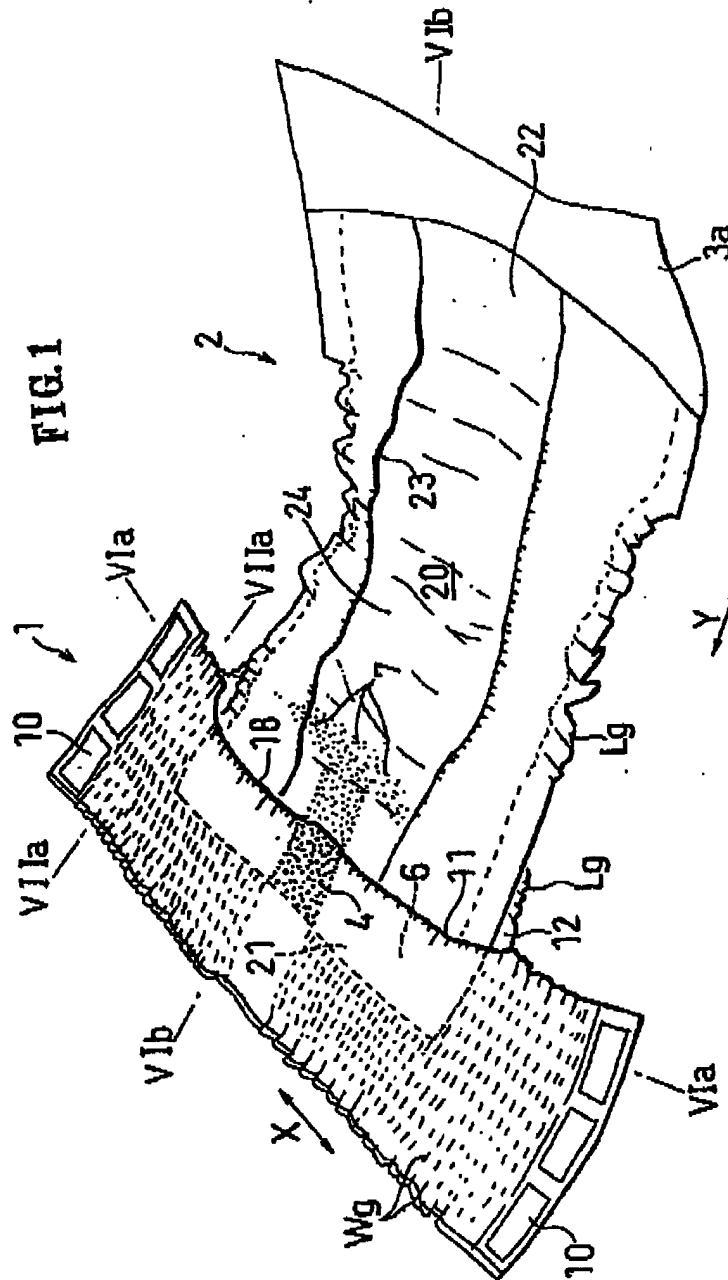
the disposable worn article further comprises leg gathers; a portion of the leg gathers is provided in the core portion; and another portion of the leg gathers is provided in the waist portion. 35

8. A disposable worn article according to any one of claims 1 to 7, further comprising an attachment member for allowing the waist portion and the second end portion of the core portion to be attached to each other. 40 45

9. A disposable worn article according to any one of claims 1 to 7, wherein:

the disposable worn article further comprises another waist portion crossing the core portion and including another elastic member; first ends of the pair of waist portions are sealed together; and second ends of the pair of waist portions are sealed together. 50 55

EP 1 486 188 A1



EP 1 486 188 A1

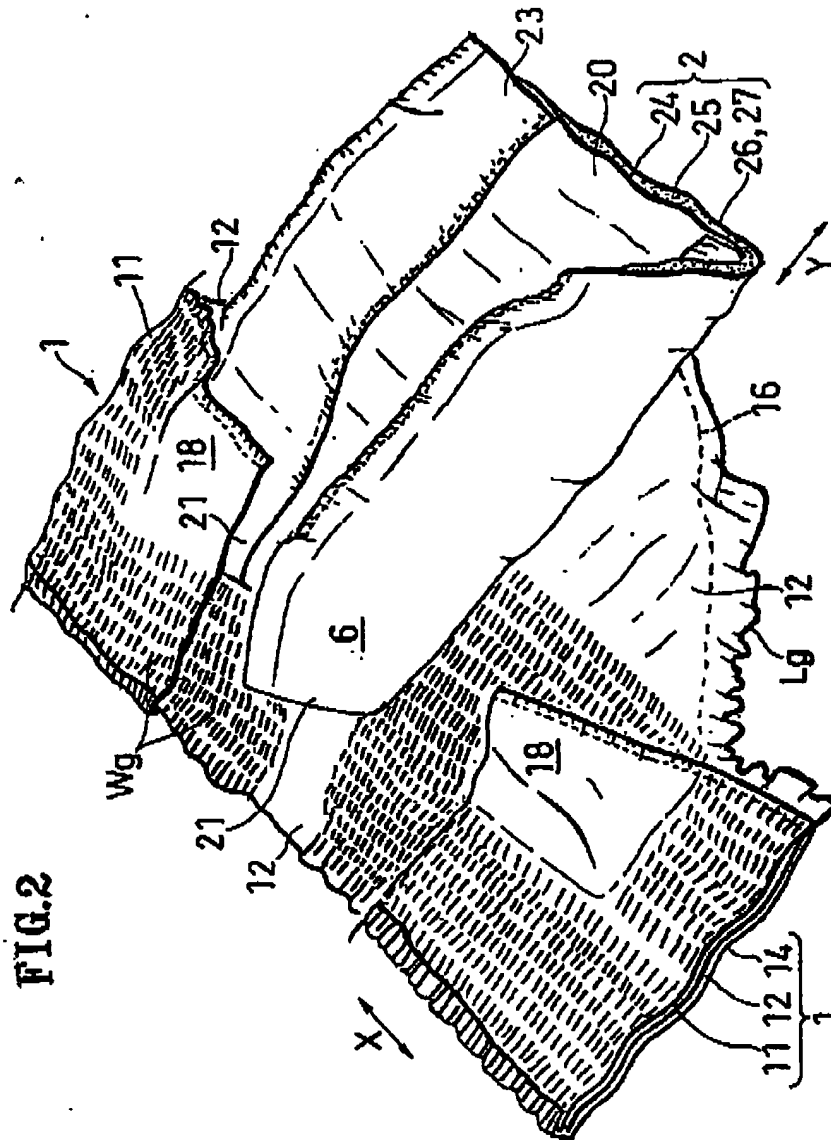
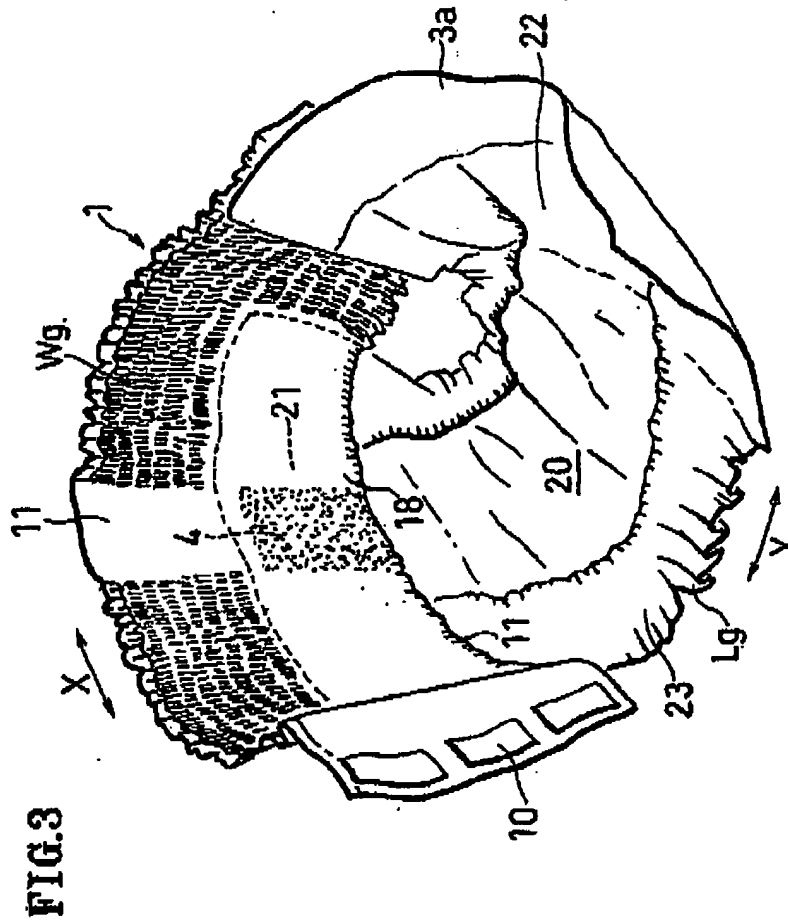


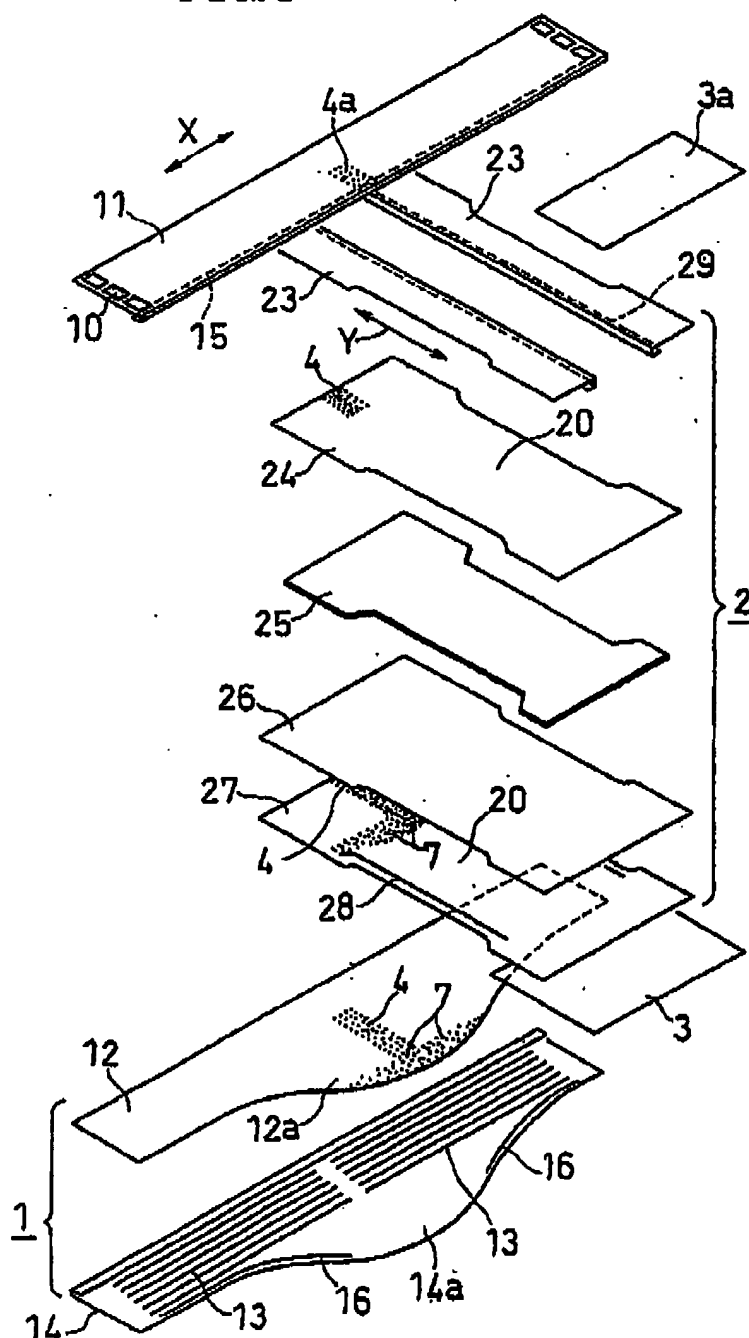
Fig. 2

EP 1 486 188 A1

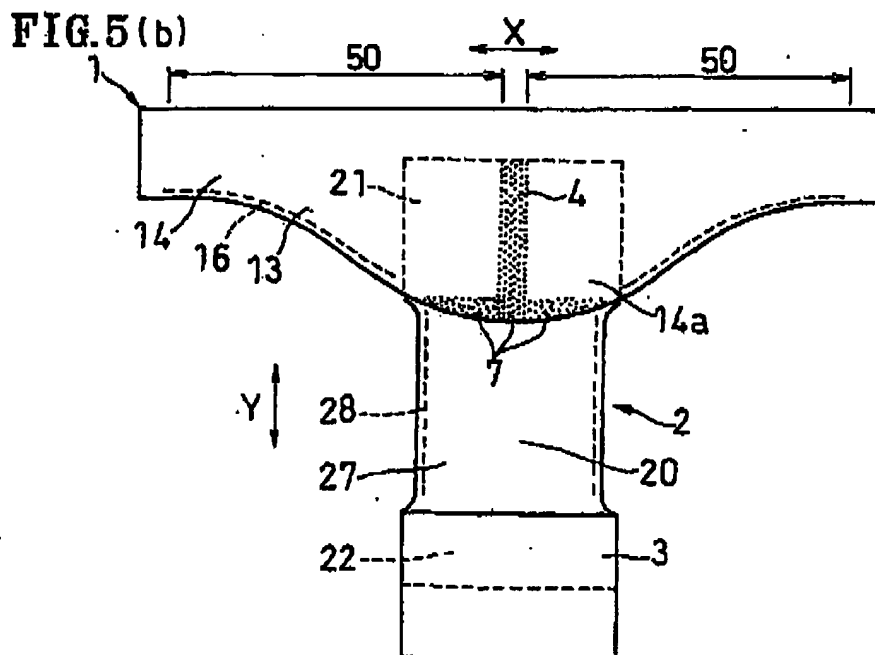
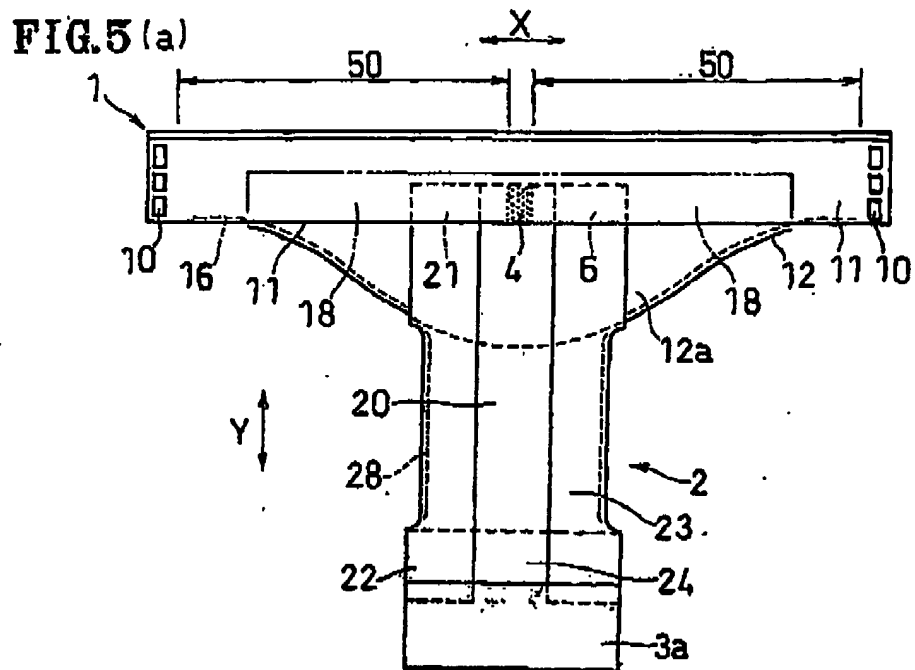


EP 1 466 188 A1

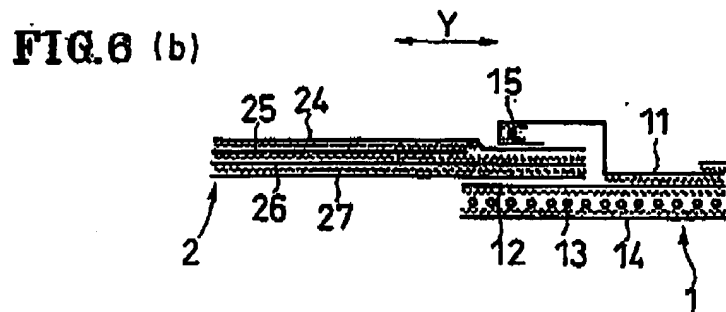
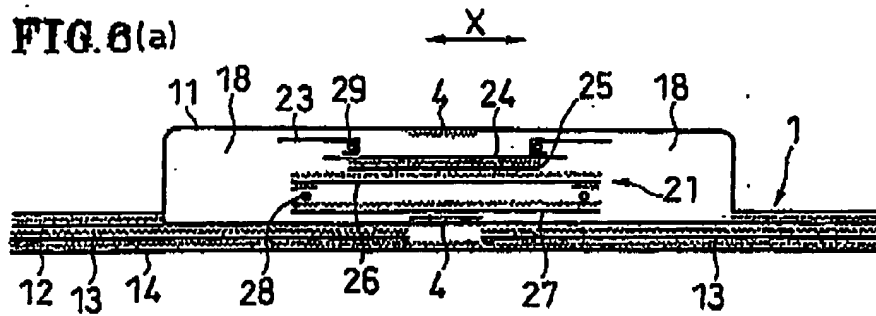
FIG. 4



EP 1 486 188 A1



EP 1 486 188 A1



EP 1 486 188 A1

FIG. 7(a)

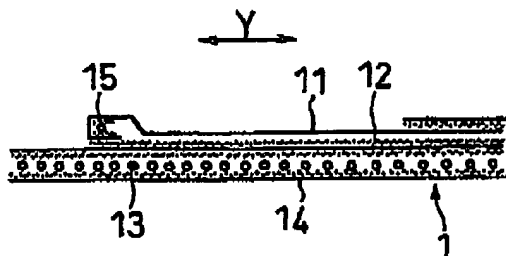


FIG. 7(b)

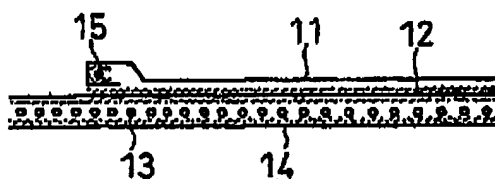
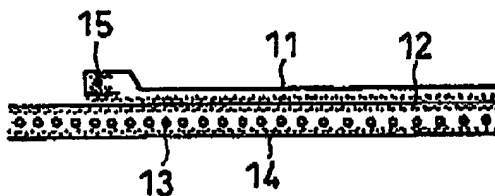
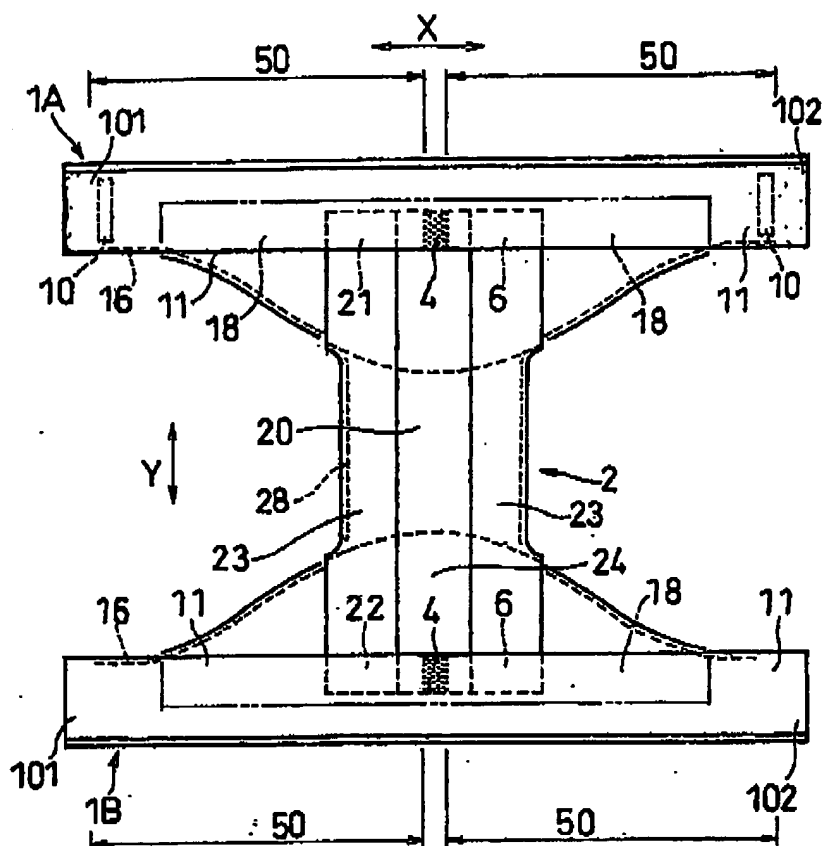


FIG. 7(c)



EP 1 486 188 A1

FIG. 8



EP 1 486 188 A1

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP03/03188

A. CLASSIFICATION OF SUBJECT MATTER Int.Cl. ⁷ A61F13/15		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) Int.Cl. ⁷ A61F13/15-13/84		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Jitsuyo Shinan Kobo 1926-1996 Toroku Jitsuyo Shinan Kobo 1994-2003 Kokai Jitsuyo Shinan Kobo 1971-2003 Jitsuyo Shinan Toroku Kobo 1996-2003		
Electronic data bases consulted during the international search (name of data base and, where practicable, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	JP 8-84747 A (New Oji Paper Co., Ltd.), 02 April, 1996 (02.04.96), Full text (Family: none)	1-3, 5-9 4
Y	JP 2000-26015 A (Kao Corp.), 25 January, 2000 (25.01.00), Par. Nos. [0016], [0023] (Family: none)	4
A	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 73465/1990 (Laid-open No. 32718/1992) (Shiseido Co., Ltd.) 17 March, 1992 (17.03.92), Full text (Family: none)	1-9
<input type="checkbox"/> Further documents are listed in the continuation of Best C. <input type="checkbox"/> See patent family group.		
* "A" Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "B" earlier document but published on or after the international filing date "C" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to supplement the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is considered with one or more other such documents, such combination being obvious to a person skilled in the art "Z" document member of the same patent family		
Date of the actual completion of the international search 14 April, 2003 (14.04.03)		Date of mailing of the international search report 30 April, 2003 (30.04.03)
Name and mailing address of the ISA/ Japanese Patent Office		Authorized officer
Facsimile No.		Telephone No.

Form PCT/ISA/210 (second sheet) (July 1998)